

AMENDMENTS TO THE CLAIMS

The listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claims 1 - 68 (cancelled)

69. (Currently Amended) A method of ~~diagnosing~~evaluating a human ~~with a joint disease involving cartilage with diseased tissue~~, the method comprising:

—~~obtaining an electronic image of a joint, wherein said image includes both normal and diseased cartilage tissue;~~

~~electronically evaluating said image to obtain~~obtaining from image data of the joint that includes both normal and diseased tissue anatomic information comprising at least one of volume, area, thickness, shape, curvature, geometry, biochemical contents, signal intensity and relaxation time of said normal and/or diseased tissue;

determining biomechanical data associated with the joint, wherein ~~determining the biomechanical data includes determining at least one axis associated with~~ comprises data concerning relative motion of the joint; and

combining the anatomic information and biomechanical data to evaluate the joint,~~the at least one axis associated with a femoral condyle coordinate system and including one of a medial-lateral axis, an inferior-superior axis, and an anterior-posterior axis; and shaping a physical model based at least in part upon said information and biomechanical data.~~

70. (Currently Amended) The method of claim 69, wherein biomechanical data further includes static loading alignment.

71. (Currently Amended) The method of claim 69, wherein biomechanical data further includes contact area or alignment during joint motion.

72. (Currently Amended) The method of claim 69, wherein biomechanical data further includes contact area or alignment during gait.

73 - 74. (Cancelled)

75. (Currently Amended) The method of claim 69, wherein determining biomechanical data further includes determining at least one axis associated with a femoral or a tibial coordinate system including one of a medial-lateral axis, an inferior-superior axis, and an anterior-posterior axis.

76. (Previously Presented) The method of claim 69, further comprising simultaneous displaying said information and biomechanical data.

77. (Currently Amended) The method of claim 69, further comprising providing a therapy based on said anatomic information and biomechanical data.

78-79. (Cancelled)

80. (Currently Amended) A method of ~~diagnosing~~ evaluating a ~~human with a~~ diseased joint ~~disease involving cartilage~~, the method comprising:

~~—obtaining an electronic image of a joint, wherein said image includes both normal and diseased cartilage tissue;~~

~~electronically evaluating said image to obtain~~ obtaining from image data of a joint that includes both normal and diseased tissue anatomic information comprising at least one of volume, area, thickness, shape, curvature, geometry, biochemical contents, signal intensity and relaxation time of said normal and/or diseased tissue;

~~determining biomechanical data associated with the joint, wherein determining biomechanical data includes determining at least one axis associated with the joint, the at least one axis associated with a tibial coordinate system and including one of a medial-lateral axis, an~~

~~inferior-superior axis, and an anterior-posterior axis; and that comprises a contact area between two components of the joint; and~~
combining the anatomic information and biomechanical data to evaluate the joint.
~~shaping a physical model based at least in part upon said information and biomechanical data.~~

81. (Currently Amended) The method of claim 80, wherein biomechanical data further includes static loading alignment.

82. (Currently Amended) The method of claim 80, wherein biomechanical data includes contact area or alignment during joint motion.

83. (Currently Amended) The method of claim 80, wherein biomechanical data includes contact area or alignment during gait.

84. (Currently Amended) The method of claim 80, wherein determining biomechanical data further includes determining at least one axis associated with the joint.

85. (Currently Amended) The method of claim 80, wherein determining biomechanical data further includes determining at least one axis associated with a femoral or tibial condyle coordinate system including one of a medial-lateral axis, an inferior-superior axis, and an anterior-posterior axis.

86. (Previously Presented) The method of claim 80, further comprising simultaneous displaying said information and biomechanical data.

87. (Previously Presented) The method of claim 80, further comprising providing a therapy based on said information and biomechanical data.

88. (Currently Amended) The method of claim ~~80~~69, wherein ~~said physical model~~ relative motion is an implant derived from a database.

89. (Currently Amended) The method of claim ~~87~~88, wherein ~~said therapy~~ the database includes ~~using the physical model~~ a collection of movement patterns for human joints.

90. (New) The method of claim 89, wherein the movement patterns are organized or can be accessed by reference to characteristic including at least one of type of joint, gender, age, height, weight, bone size, type of movement and distance of movement.

91. (New) The method of claim 69, wherein relative motion is derived using gait analysis.

92. (New) The method of claim 91, wherein gait analysis is used to derive patient specific movement patterns.

93. (New) The method of claim 69, further comprising merging the anatomic information and the biomechanical data.

94. (New) The method of claim 69, wherein biomechanical data further includes axis alignment.

95. (New) The method of claim 69, wherein biomechanical data further includes moments and forces between bones.

96. (New) The method of claim 69, wherein biomechanical data includes moments and forces between cartilages.

97. (New). The method of claim 69, wherein biomechanical data further includes the rotation and translation of a femur with respect to a tibia.

98. (New) The method of claim 69, wherein biomechanical data further includes loading conditions assessed based on anatomical features of each individual patient.

99. (New) The method of claim 69, wherein the step of combining the anatomical information and the biomechanical data further includes generating a model based on the anatomic information and the biomechanical data.

100. (New) The method of claim 69, wherein at least some of the biomechanical data is determined using an optimization calculation.

101. (New) The method of claim 80, wherein biomechanical data includes static loading alignment.

102. (New) The method of claim 80, wherein biomechanical data includes contact area or alignment during joint motion.

103. (New) The method of claim 80, wherein biomechanical data includes contact area or alignment during gait.

104. (New) The method of claim 80, wherein determining biomechanical data includes determining at least one axis associated with the joint.

105. (New) The method of claim 80, wherein determining biomechanical data further includes determining at least one axis associated with a femoral or tibial condyle coordinate system including one of a medial-lateral axis, an inferior-superior axis, and an anterior-posterior axis.

106. (New) The method of claim 80, further comprising simultaneous displaying said information and biomechanical data.

107. (New) The method of claim 80, further comprising providing a therapy based on said information or biomechanical data.

108. (New) The method of claim 80, wherein dynamic motion is derived from a database.

109. (New) The method of claim 108, wherein the database includes a collection of movement patterns for human joints.

110. (New) The method of claim 109, wherein the movement patterns are organized or can be accessed by reference to characteristic including at least one of type of joint, gender, age, height, weight, bone size, type of movement and distance of movement.

111. (New) The method of claim 80, wherein dynamic motion is derived using gait analysis.

112. (New) The method of claim 111, wherein gait analysis is used to derive patient specific movement patterns.

113. (New) The method of claim 80, wherein diagnosing a human with a joint disease further comprises merging the image data and the biomechanical data.

114. (New) The method of claim 80, wherein biomechanical data includes determining axis alignment.

115. (New) The method of claim 80, wherein biomechanical data includes determining moments and forces between bones.

116. (New) The method of claim 80, wherein biomechanical data includes determining moments and forces between cartilages.

117. (New). The method of claim 80, wherein biomechanical data includes determining the rotation and translation of the femur with respect to the tibia.

118. (New) The method of claim 80, wherein biomechanical data includes loading conditions assessed based on anatomical features of each individual patient.

119. (New) The method of claim 80, wherein the step of combining the anatomical information and the biomechanical data further includes generating a model based on the anatomic information and the biomechanical data.

120. (New) The method of claim 80, wherein at least some of the biomechanical data is determined using an optimization calculation.